Effects of Online Instruction to Student Motivation and Level of Participation in IT Network & Security Course

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Abstract: Technologies have a great and positive impact on students' learning. Innovation of technology in teaching is now widespread, especially in creating lessons that are more interesting. Online instructions were created to improve and enhance student motivation in learning selected topics in the IT Network and Security course at the College of Computer Studies at the University of Antique, Philippines. The subjects of this study were 46 students from the Bachelor of Science in Information Technology (BSIT). This study primarily aims to analyze the impact of online instructions on students' learning.

1. Introduction

Advances in digital technologies have largely changed many avenues of learning, especially in terms of online teaching, including making information accessible to students and to all groups of people [1]. Education has reached most parts of the world and Information and Communications Technology (ICT) has become an integral part of human life [2][3].

The general increase in electronic readership has perhaps also influenced the willingness of students to try online courses due to the daily challenges such as the difficulty of commuting in traffic, rising gas prices, and global environmental concerns, as well as the low cost of computers and the near-ubiquity of Internet access, helps make telecommuting to school via online classes a very attractive option for students [4].

With high technology used effectively as part of a class, demonstrations can help engage students and enhance their ability to learn the material. Online teaching and instruction is an innovative approach for delivering classroom learning to a remote audience (*i.e.*, learners), using the web as the medium [5].

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Online education is expected to contain the following features [6]:

- offers a different learning experience as learners are also different from that in the traditional classroom,

- the communication is done electronically via a computer and the Internet (*i.e.*, the World Wide Web or WWW)

- monitoring of class participation is done through e-mails or messages and discussion boards.

- the social dynamics of the learning environment are changed,

- the discrimination and prejudice can be minimized as equal opportunities can be provided to the learners.

Regardless of the definition of online education, the extensive popularity of online courses has been indicated in a survey conducted by the U.S. Department of Education, which revealed that more than 54,000 online courses were being offered in 1998 and with enrolled students of over 1.6 million [7].

Technology has positively impacted student learning as well as the educators teaching strategies [8][9]. Technology has encouraged students to become more actively engaged in class and activity discussions, thus, students often learn more information. Due to the rapidly increasing global proliferation of new and advanced technologies, learning becomes more relevant and provides a meaningful experience [10]. In addition, technology has enabled hands-on learning opportunities that can be integrated into academic areas. It has given students the opportunity to collaborate and work together with their peers resulting in shared learning. Thus, technology can be considered one of the major factors that provide a positive impact on students' learning and motivation [11].

This paper aims to determine the assessment of the respondents (*i.e.*, students) to online instruction in terms of contents, objectives, materials, and communication, and students' level of motivation in learning after being exposed to online teaching.

The remainder of this paper is organized as follows: Section 2 outlines the related studies; Section 3 discusses the methodology of the study; the discussion and interpretation of results and findings were discussed in Section 4; and Section 5 concludes the study.

2. Related Studies

As online technologies continue to evolve, education also evolves attempting to take advantage of such technological advances. In this regard, online education is continuing to grow and expand. In the study conducted by Allen and Seaman [12] as cited by Lathrop [13], there are about 5.6 million students in the United States (US) who were enrolled in at least one online course in the fall semester of 2009. There has been an increase of 1 million students from 2008 (*i.e.*, in the span of a year). That is, online enrollment has increased by 21% and as a whole, the enrollment in higher education programs only increased by 2%.

Online learning can be more advantageous as compared with face-to-face (F2F) courses [14]. These advantages include unlimited access to review materials and resources before the exams, the accommodation of many learning styles and strategies, and scheduling flexibility. However, a serious disadvantage of online courses is the required upfront costs and time in developing them [15]. In addition, another trend observed in online classes is the tendency of learners to drop out of the course (*i.e.*, an increased drop-out rate). The increased rate of students dropping out of their online courses could mean

that there is a need to improve the design of the online learning environment in order to increase student motivations and their active engagement in the course [16].

Despite the disadvantages and limitations, online learning has provided learners with unique opportunities [13]. One of those opportunities is that learners may experience field-based activities (*i.e.*, outside of a classroom) which may not be possible in F2F courses due to weather conditions or classroom budget constraints. In addition, online learning allows students to roam around the digital world. The learners from different universities and institutions are also allowed to collaborate with each other through group study sessions and activities.

Another unique opportunity that was been brought about by the increasing utilization of online learning is the creation and development of online learning objects. Online learning objects refer to small, bite-sized pieces of portable, electronic, educational learning materials which address an individual learning objective or a focused topic [17][18]. Due to the small size of online learning objects, they can be easily shared and distributed among students, professors, institutions, and universities. These instructional materials (*i.e.*, online learning objects) require time and monetary budget for their development, thus, the learning effectiveness of every part must be guaranteed [15]. To lessen the cost, other alternative approaches such as recording lectures and distributing online were utilized in contrast with the development of online learning objects.

Online learning can be very flexible as learning the electronic lessons and activities can be performed by the learners asynchronously [19][20]. The learners must rely on a self-study principle and must depend on their own motivation in learning the lessons and completing the learning. Learning can be facilitated by the instructors or professors with varying strategies but they can follow a recommended schedule and assist with questions through e-mail or message and discussion boards. The determination of the different factors that influences the students' motivation in an online learning environment will provide insights into how the online learning objects can be modified or designed to improve students' learning and performance.

The study of Namuth *et al.* [17] reviews the literature on online learning objects and stated that there is a clear gap existing in research that concerns the students' motivation in an online environment for the undergraduate information technology (IT) security and protection course. In addition, motivational research was conducted on both college science students regarding the use of online learning objects.

3. Research Methodology

The Information Technology (IT) third-year students were the selected participants of the study which is scheduled at 10 in the morning. A total of 46 students were selected in order to determine the level of motivation and extent of participation through the use of online instruction.

To strengthen the data gathered from the questionnaire, some relevant sources were also provided. Such a method greatly helped the researcher to verify as well as clarify, for better understanding, information and responses given in the questionnaire checklist which was the main data gathering tool of this investigation. The main instrument used by the researcher is a questionnaire, a list of written questions related to a particular topic intended for the subject respondents to reply to. There are given questions where the students will go to rate it according to their acceptability of online instruction.

- Part I attempted to find out the content acceptability of the students towards online instruction whether or not they liked the presentation or not.

- Part II contained questions that are based on the goal or objective of the instructor in teaching their students in the IT & Security course.

- Part III contains questions that are based on the acceptability of the instructional materials which include using online instruction

- Part IV contains questions about the communication process being encountered by both parties during the process of instruction.

The statistical treatment of weighted mean was used to answer problems one (1) to four (4) to find out the perception of students of online instruction in the IT Network and Security course as an innovation to the traditional way of teaching at the College of Computer Studies (CCS) University of Antique (UA), Philippines. Weighted mean was used to give quantities being averaged in their proper degree of importance. It is computed based on Equation (1) [21]:

$$WM = \sum \frac{Wf}{N} \qquad\qquad (1)$$

Where

WM refers to the weighted mean,

W is the weight of each evaluative criterion,

Σ means "*Sum of*",

N is the total number of respondents, and

f is the frequency of occurrences.

4. Results and Findings

Figure 1 displays the respondent's results on the content acceptability towards online instruction. It was revealed that the four questions are favorable to the students except "*topics presented are hard to pick up the important points*" gives unfavorable verbal interpretation which proves a positive feedback to the content on online teaching in IT Network & Security course. Based on the findings, it was revealed [22] that there is a high level of acceptability of the idea of online instruction and the use of technology is beneficial.
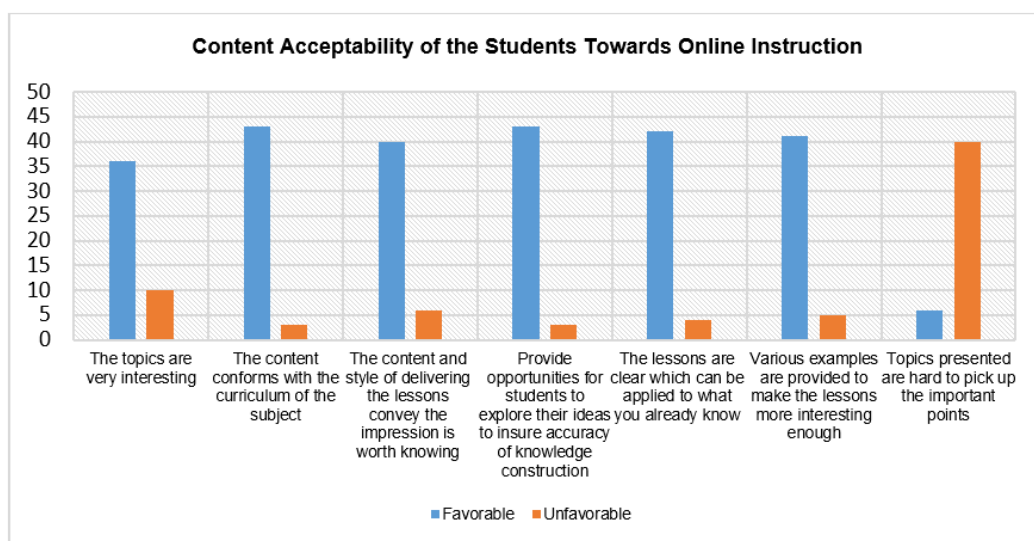

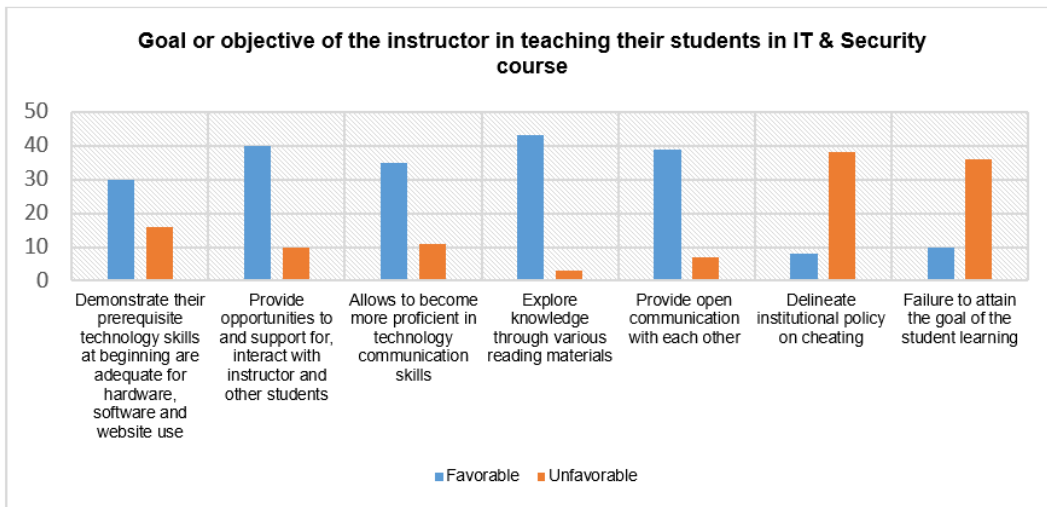**Figure 1**. Content Acceptability of the Students towards Online Instruction

Figure 2. Goal or Objective of the Instructor in Teaching their Students in IT & Security Course

Based on the results as presented in Figure 2, it was revealed that "*Delineate institutional policy on cheating*" and "*Failure to attain the goal of the student learning*" are unfavorable to the respondents, this shows that the objective of the IT & Security course with the use of online instructions are met.

In terms of acceptability of instructional materials as seen in Figure 3, the respondents favor "*provide an adequate user-friendly working environment*", "*provide structured activities to an effective framework for online learning*", "*the materials are eye-catching*", and "*providing continuous technical support*" while "*difficult to understand*", "*ensure a low level of technological difficulties in accessing website and communication*", and "*the pages of this lesson look dry or unappealing*" gives unfavorable verbal interpretation which shows that Instructional Materials used in Online Teaching is acceptable to the respondents.
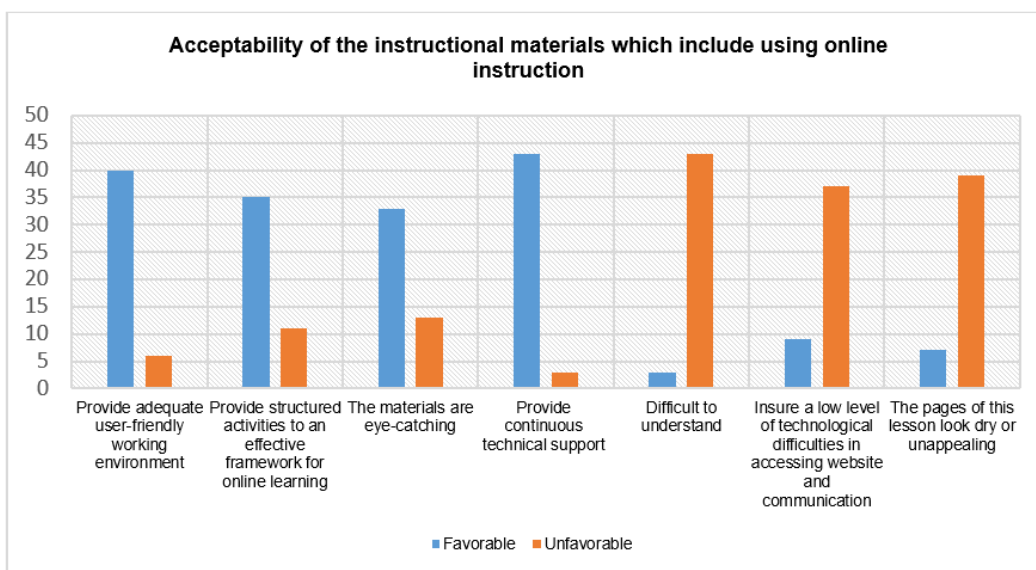

Figure 3. Acceptability of the Instructional Materials Which Include Using Online Instruction
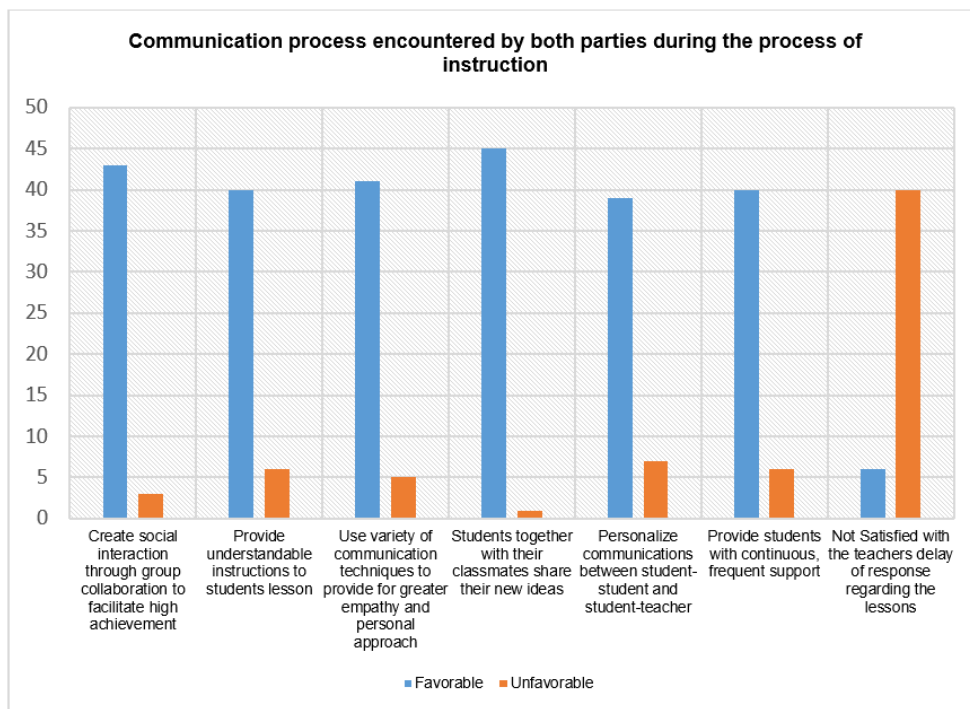
Figure 4. Communication Process Encountered by Both Parties During the Process of Instruction

And lastly, in terms of the communication process encountered by both parties during the process of instruction as seen in Figure 4, it was revealed that the 6 questions are favorable to the students except for "*not satisfied with the teachers' delay of response regarding the lessons*" gives unfavorable verbal interpretation which shows that communication between the teacher and the student is possible using online teaching.

5.   Conclusion and Future Works

Online learning changes the way that students of all types and ages interact with and access information which can open up new worlds for students. The results revealed that the majority of the respondents are favorable to the questions of the study on student learning expectations and outcomes. Technology integration has the following benefits: increased student motivation, increased student engagement, increased student collaboration, increased hands-on learning opportunities, increased confidence in students, and increased technology skills. Online learning helps effective time management and motivates students to do their work independently by accessing unlimited resources anytime and anywhere.

In the future, instructional materials based on educational paradigms suited for online instructions will be analyzed and designed.

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